NXT GEN hightech

IMS TAKING YOU STEPS AHEAD

Semicon 08:

Metrology Equipment for critical scaling of PIC Production

Within this project, two machines are being developed to test integrated photonic chips with the aim of becoming a global leader in visual and prober test equipment for integrated photonics as part of the consortium. Three generations of machines are being developed in which fundamental research is transformed into working machines.

IMS: Driving Innovation in the Semicon 08 Metrology equipment for critical scaling of PIC production project for Precision Metrology Equipment

Integrated Mechanization Solutions, better known as IMS, has established itself as a leading expert in precision assembly and processing equipment over the past decades. With a strong focus on advancing the capabilities of production equipment, particularly in the realm of optical components, IMS has built a reputation for driving innovation and quality to new heights. The company's deep expertise in creating high-precision, modular, and robust production systems has positioned it as a key player in the photonics industry, making it the ideal leader for the MEKOPP consortium in the Semicon 08 project.

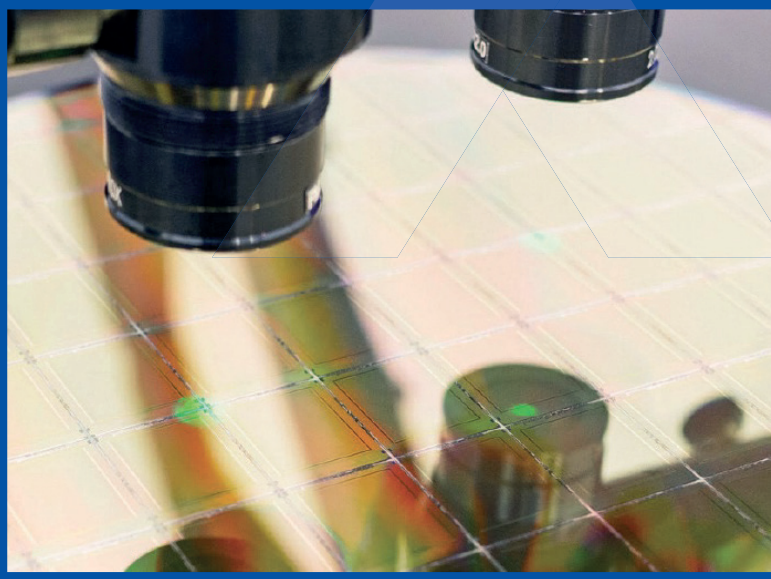
Critical Role in the Semicon 08 Project
In the Semicon 08 Metrology equipment for critical scaling of PIC production project, IMS serves as both the project lead and the original equipment manufacturer (OEM) responsible for bringing the developed metrology equipment to the market. As the system integrator, IMS is tasked with coordinating the contributions of various partners, ensuring that all components are seamlessly integrated into a cohesive system. The company is also responsible for the system-level testing and validation, guaranteeing that the equipment meets the stringent requirements of the photonics industry.

Technically, IMS contributes its extensive knowledge in the design and realization of high-precision, modular, and robust production equipment. This expertise is critical in developing metrology tools that can withstand the rigorous demands of production environments while delivering precise and reliable measurements. The equipment developed under IMS's guidance is expected to significantly enhance the efficiency and scalability of PIC production by enabling earlier defect detection, more extensive data gathering, and faster feedback loops.

Expectations and Future Impact
IMS views the NXTGEN HighTech initiative as a crucial supporter in advancing the photonics industry. The company expects the initiative to provide essential subsidies, access to expertise, and increased visibility for the consortium. These resources will be vital as IMS and its partners transition from prototype development to market-ready products. IMS is particularly focused on launching field trials with early customers, gathering valuable performance data, and refining the equipment based on real-world feedback.

The tools developed in the Semicon 08 project are expected to play a major role in maturing and scaling up photonics production over the coming years. By moving from laboratory-based, scientist-operated inspections to robust, production-ready tools, IMS aims to facilitate the widespread adoption of photonic technologies in industrial settings.

Added Value and Industry Integration
IMS's unique value in this project lies in its ability to combine innovative R&D approaches with the engineering discipline required for 24/7 production operations. The company's experience in developing hundreds of machines that operate reliably across the globe ensures that the metrology equipment produced will not only be cutting-edge but also dependable in high-volume manufacturing environments.



The inspection tools developed by IMS are designed to transition photonics from a nascent technology to a mature industry with well-established production processes. These tools will enable larger-scale data collection and analysis, shorter feedback loops, and earlier detection of defects, ultimately leading to higher yields and more efficient production workflows.

Ongoing Contributions and Future Plans
IMS has already completed the first version of a visual inspection tool, which is currently being demonstrated to potential customers. Additionally, the first test prober is being assembled and is expected to be ready for demonstrations by Q4 2024. Looking ahead, IMS plans to focus on two parallel paths: refining the equipment based on customer feedback and field performance (2025-2026) and developing new technologies for future versions of the equipment, aiming for a large-scale launch by 2030.

Conclusion
IMS's leadership in the project highlights its commitment to driving innovation in the photonics industry. By leveraging its expertise in precision assembly and production equipment, IMS is not only developing the tools needed to scale up PIC production but also setting new standards for quality and efficiency in the industry. As the project progresses, IMS remains dedicated to ensuring that the metrology equipment developed will meet the evolving needs of the photonics ecosystem and pave the way for the future of high-tech manufacturing.

About **NXTGEN Hightech**

The NXTGEN Hightech program has been awarded a grant from the Dutch National Growth Fund to stimulate structural and sustainable economic growth in the Netherlands. Learn more:

www.nxtgenhightech.nl

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